of the Imperial College are well aware how considerably the equipment and buildings of the constituent institutions have been supplemented.

On Tuesday, January 30, the Bessemer Memorial Committee formally handed over to the governors of the Imperial College a costly plant for use in the Royal School of Mines. Visitors to the institution on that occasion will have fully realised the relation which this gift must bear to the efficiency of the School of Mines. The laboratory within which the Bessemer gift has been accommodated is one of the numerous extensions now taking place at South Kensington in connection with both the City and Guilds (Engineering) College and the Royal School of Mines. The ore floor of the laboratory, which runs across its east end, is 121 feet long by 30 broad, and is continued as a 12-foot gallery along the south side, and as a 6-foot gallery along the west end. Accommodation is afforded for nine ore bins of 10 tons capacity each, with discharge-gates above the ground floor to fill cars running on a line of track to the elevator. A large dry crushing-room has been provided beneath the ore floor with an elevator passing through it to a sizing-trommel and shaking-screen, another elevator passing up to a line of trommels feeding four jigs on the concentration floor. There is a Blake crusher at the northern end connected by rails from the elevator, rails being also laid along the south gallery to the furnace department at the extreme west.

We have here the complete equipment of the most recent mining and metallurgical plant which has ever been installed in an educational institution. But if this plant were only designed for academic purposes it would scarcely constitute a sufficient memorial to Sir Henry Bessemer. It is gratifying, therefore, to find that in consequence of representations made to the governors by many practising mining engineers and metallurgists, as well as by the Bessemer Memorial Committee itself, the whole instalment of machinery will be placed at the disposal of professional men for private research and investigation. We cannot imagine anything more appropriate as a memorial to Bessemer than this fact, which was announced on the occasion of the donation.

On behalf of the Bessemer Memorial Committee, Colonel Sir Charles Allen formally handed over the equipment to the governing body. In this connection he referred specially to the appropriateness of the memorial, both as regards the particular form it had taken and its association with the Royal School of Mines, and expressed his great satisfaction in that he had been selected by his colleagues, in the absence in Egypt of Sir William Preece, the chairman of the Bessemer Memorial Committee, formally to make the presentation. Sir Charles further stated that as a near relative and an intimate friend of the late Sir Henry Bessemer he felt sure that the memorial could not have taken a form which would have appealed to him more, since he was very specially interested in the educational training of the engineer.

The Right Hon. Gerald W. Balfour, chairman of the executive committee, accepted the gift of the equipment on behalf of the governing body, associating especially those who are members of the committee, and who, in consequence, have been so intimately concerned with the collection of the memorial, in particular Sir William Preece, and also those others who have contributed to the memorial and so enabled the main ideas to be realised. He heard with the greatest possible satisfaction that the committee was not now to be dissolved, but that it hoped to obtain sufficient funds to enable it to maintain the first equipment and keep it in closest touch with industrial requirements, and also to add to and extend it from time to time as is found to be necessary. He understood that as a laboratory and as an equipment it compared most favourably with anything of the same kind in this or any other country, and went on to state that this implied a corresponding obligation on the governing body of the Imperial College to see that it was put to the fullest and best possible use. He hoped that in this respect the Royal School of Mines would justify its former proud record and its present objects as a part of the Imperial College, and would by research and the most advanced scientific work render imperial service to the industries associated with mining and metallurgy.

NOTES.

WE regret to see the announcement of the death, on January 28, of Admiral the Right Hon. Sir John Charles Dalrymple-Hay, Bart., G.C.B., F.R.S., in his ninety-first year.

DR. A. P. LAURIE, principal of the Heriot-Watt College, Edinburgh, has been elected to the professorship of chemistry in the Royal Academy, vacant by the resignation of Sir Arthur Church, K.C.V.O., F.R.S.

THE death is announced, at the age of eighty-nine years, at Schaffhausen, of M. Jacob Amsler, corresponding member of the Paris Academy of Sciences in the section of mechanics since 1892.

ACCORDING to the daily papers, M. Védrines, the French aviator, is, in conjunction with Dr. Charcot, making arrangements to attempt, probably in two years' time, to reach the South Pole by aëroplane.

THE annual meetings of the Institution of Naval Architects will be held on March 27–29 in the hall of the Royal Society of Arts, John Street, Adelphi, London, W.C. The president, the Marquis of Bristol, R.N., will occupy the chair.

THE Paris correspondent of *The Times* states that a committee has been formed at Dôle, the native town of Pasteur on the slopes of the Jura, for the purchase of the house in the Rue des Tanneurs in which this great man of science was born, and that Mr. J. D. Rockefeller has subscribed the remaining 2200*l.* required to purchase the house.

THE Darboux jubilee celebration passed off successfully on January 21. Congratulatory speeches were made by MM. Lippmann, Poincaré, Appell, and others, including the Minister of Public Instruction, after which a commemorative gold medal (by Vernon) was handed over to M. Gaston Darboux. In his reply M. Darboux referred with satisfaction to the present organisation of higher education in France, as compared with what he could remember. Many delegates from foreign societies were present on the occasion.

DR. CHARLES CHILTON, professor of biology at Canterbury College, New Zealand, has been granted leave of absence for 1912, and will spend nearly the whole of the year in Europe visiting the chief biological laboratories and stations. He is at present working at the Marine Laboratory at Plymouth, and is preparing a report on the Amphipoda collected by Dr. Bruce during the voyages of the *Scotia* in Antarctic seas.

AT its annual conversazione this year, the Selborne Society proposes to arrange a Gilbert White exhibition, consisting of relics and manuscripts of the author of the famous "Natural History of Selborne," with collections illustrating his work and times. The exhibition will be open on February 16 at the conversazione, and to the public on the following day by kind permission of the First Commissioner of his Majesty's Works. It is hoped that all who have objects of interest which should form part of the exhibition will communicate with the honorary secretary of the Selborne Society, at 42 Bloomsbury Square, W.C.

AT the end of the current session Sir William Ramsay, K.C.B., F.R.S., will resign the chair of general chemistry in University College, London, to which he was appointed in 1887. At a meeting of the Senate of London University held on January 24, it was resolved:—"That the Senate accept Sir William Ramsay's resignation with sincere regret, and desire to express to him their high appreciation of the services which he has rendered to the University both by his inspiring work as a teacher and by the great series of researches carried out by him at University College during his tenure of the chair of chemistry." It is unnecessary here to refer to Sir William Ramsay's distinguished career, since so recently as January 11 his work was described in our "Scientific Worthies" series by Prof. Wilhelm Ostwald.

ON Monday, January 29, Prof. J. Norman Collie, F.R.S., gave to the Royal Geographical Society an account of his recent explorations in the Rocky Mountains to the north of the Yellow Head Pass. In 1910 he and Mr. A. L. Munn utilised the new branch of the Canadian Pacific Railway by Edmonton to explore the valley of the Smoky River and the mountain region which it traverses. All existing maps of the region are both incomplete and inaccurate, and the information gained in 1910 encouraged the explorers in 1911 to utilise the routes which they had found, and to study more thoroughly the region traversed in the preceding year. Magnificent glaciers, vast snowfields, and range upon range of snow peaks were seen; the main watershed was determined over many miles of the range, and topographical questions of interest were investigated. Series of parallel ranges with transverse valley complicate the drainage, which at some points is indeterminate, flowing at one point to the Atlantic in 1909, and by a new channel in a shingle flat to the Pacific in 1910. Both to the mountaineer and to the student of mountain structure this region, now being rendered accessible by railway, offers problems of the greatest interest.

WE regret to record that the distinguished surgeon, Sir Henry Trentham Butlin, Bart., died on January 24, at the age of sixty-six. He was elected president of the Royal College of Surgeons of England in 1910, and again in 1911, but to the regret of all found it necessary to resign that honour only a few weeks ago on account of his health. His investigations and clinical observations helped to improve many branches of practical surgery, but his chief services to medicine were rendered as an ardent supporter and leader of every movement directed towards the improvement of medical education and of medical research. He was himself a keen student of cancer, regarding that disease as parasitic in nature, and took a most active part in the management of the Cancer Research Fund. During the years he was dean of the medical faculty of the University of London he led a strenuous movement which sought to concentrate the teaching of medical subjects in a teaching university worthy of London. He was president of the British Medical Association when that body held its great meeting in London in 1910. His great public services to medicine were recognised last year, when he was created a Baronet. Sir Henry Butlin was a pupil of Sir James Paget, and held the memory of that great surgeon in the highest esteem.

WE announced last week with regret the premature death of M. Théophile Durand, director of the Jardin Botanique de l'État at Brussels, who, after a prolonged illness, which assumed a serious aspect about six weeks ago, passed away on Friday, January 12. He was born at Saint-Josse-ten-Noode, a suburb of Brussels, on September 4, 1855. In 1880 he entered the Botanic Garden at Brussels, then under the directorship of F. Crepin, and he remained intimately connected with that establishment to the last. He was appointed "Conservateur au Jardin Botanique" in 1880 and director in 1902, succeeding F. Crépin. He was more a bibliographer and compiler than a man of original research, but within those limits he was very active and successful. In most of his publications he shared the authorship with a collaborator, probably an unavoidable consequence of his very defective eyesight; but he is solely responsible for the "Index Generum Phanerogamarum," which appeared in 1888, and for the "Introduction" and the third volume (Phanerogames) of the "Prodrome de la Flore Belge," by Durand and De Wildemann. With the latter he also published a volume of "Illustrations de la flore du Congo," and another of "Contributions à la flore du Congo"; further, "Plantae Thonnerianae Congolenses," "Reliquiae Dewevrianae," and a "Matériaux pour la flore du Congo"; with Schinz, a "Conspectus Florae Africae," of which, however, only vol. i., part i., and vol. v. appeared, and "Études sur la flore de l'état indépendant du Congo"; with his daughter Hélène, a "Sylloge florae Congolanae" (Phanerogamae); with Pittier, a "Primitiae Florae Costaricensis," since continued by Pittier; and with B. D. Jackson the first supplement to the "Index Kewensis." T. Durand was a corresponding member of the Belgian Academy, a Chevalier de l'Ordre de Léopold, and Officier de l'Ordre de la Couronne. He was for some time president of the Geographical Society of Belgium, and general secretary of the Botanical Society of Belgium, and in 1910 he acted as one of the presidents of the International Botanical Congress, held at Brussels.

AN extension of the Horniman Museum, comprising a lecture hall and a new library, the gift of Mr. Emslie J. Horniman, was opened to the public on January 27 by Sir Archibald Geikie, K.C.B., president of the Royal Society. The library is a students' reference library of books on anthropology, zoology and botany, and other works of assistance to biological workers. In declaring the building open, Sir Archibald Geikie said that the old idea that a museum is a miscellaneous collection of oddities has passed away. Museums are now to be found in every town of consequence, and they are as much an essential part of a town's organisation as an art gallery or public library. One great necessity in starting a museum is to begin on scientific lines. The Horniman Museum has been arranged on such lines, which give the ordinary man in the street a clear notion of the relations of different animals and the various functions which they perform. One good feature is the excellent labels affixed to the specimens. A good label is just about as essential as the object to which it is affixed.

A CIRCULAR letter from the Research Defence Society reminds us that it is just four years since the society was founded, to make generally known the facts as to experiments on animals in this country, and the regulations under which they are conducted, the immense importance of such experiments to the welfare of mankind, and the great saving of human and animal life and health which is already due to them. During the past year the society gained 1000 new members and associates, and formed ten new branches. It now has 5000 members and associates. The following pamphlets and leaflets have been published during the year:—(1) "A Question of Ethics"; (2) "Experiments during 1910"; (3) "The Facts of the Case"; (4) "The Saving of Human Lives"; (5) "The Rockefeller Institute"; (6) "The Case presented by Antivivisectionists"; (7) "Recent Surgical Progress"; (8) "Antivivisection Shops"; (9) "Tuberculosis"; (10) "Sleeping Sickness"; (11) "Annual Report, Balance Sheet, and List of Members and Associates." A book is in the press giving a full *résumé* of the evidence before the Royal Commission; it will be published within a few weeks after the publication of the final report of the Royal Commission. It is hoped that many readers of NATURE will become members or associates of the society, and will help its useful work. The honorary secretary, Mr. Stephen Paget, 21 Ladbroke Square, London, W., will be glad to answer every inquiry, to send literature to applicants for it, to receive names for membership or associateship, and to make necessary arrangements for addresses and lantern-lectures in London or elsewhere.

IN the January issue of *The Quarterly Review* Sir E. im Thurn describes the social and economical condition of the Crown Colony of Fiji, with special reference to the question of imported labour. He concludes that the British islands in the western Pacific, with a few negligible exceptions already annexed to the Dominions of Australia and New Zealand, form one growing Crown Colony, widely isolated from all others, and lying adjacent to these great Dominions. There are, he believes, good reasons why these islands should not be immediately annexed to either of these Dominions. But it is time that efforts should be made to advance their growth and development, so that they may be fitted ultimately to join the future United Dominion of Australasia, which is destined to represent the British Empire in the western Pacific.

THE Journal of the Gypsy Lore Society commences in part ii., vol. v., the publication of an important sociological report on the Gypsy problem, being a State paper compiled in 1900 by Mr. A. Tresleff, secretary of the committee appointed in Finland to consider the laws and relations of the Government with these people. Mr. Tresleff, provided with recommendations from the Czar, visited many parts of Europe and made personal inquiries into the condition of these nomads and the legislation affecting them. The question, one of no ordinary difficulty, is discussed by a capable and impartial official, and will be of much value to all who are interested in the problem. The Journal has done good service by bringing it, in a translation prepared under the writer's supervision, before the British public.

IN the January issue of *Man* Mr. C. W. Hobley describes a remarkable collection of protective charms obtained from an old elephant hunter at Ukamba, British East Africa. Various kinds of powder eaten before a hunting expedition make the sportsman's aim straight· another is a whip, which on such occasions is cracked seven times "for good luck"; and two twigs bound together, if bitten after mentioning the animal which the hunter wishes to capture, secure success, and are also useful in winning a suit in the court of the Elders. Another charm is used when a new village is being founded; if the owner walks with it round the proposed site, no beasts of prey will pass the charmed circle. The trade of manufacturing these charms must be profitable, as their price ranges from Rs. 35 and five goats for the magic powder down to smaller numbers of these animals for the cheaper varieties.

WE have on several previous occasions made allusion to the valuable work issued from the medical radiographic department of Guy's Hospital, in which, by the X-ray method after a bismuth meal, kinks and similar disorders in the intestinal tube can be detected. The most recent of these papers, from the pen of Dr. A. C. Jordan (Proc. Roy. Soc. Med., 1911, vol. v., p. 9), deals with the subject more fully, and is illustrated by a number of excellent skiagrams. The intestinal stasis produced by kinks leads to a well-recognised chronic illness, which makes life unendurable. It can be remedied by a radical cure spoken of as "short circuiting." This consists in dividing the lower end of the small intestine and attaching it to the rectum. The cases recorded show most gratifying results.

To the Transactions of the Buchan Club for 1910–11 Mr. W. Taylor contributes a list of the cetaceans recorded during the last forty years on the east coast of Scotland.

THE exhibition illustrating the animals, plants, and minerals mentioned in the Bible, which was opened last summer at the Natural History Museum, has been so much appreciated by the public that it is to be maintained for some time longer. A new edition of the guide-book to this exhibition contains certain emendations on the original text.

SOME interesting particulars with regard to the distribution of the minute aquatic crustaceans of the genus Apus in eastern Asia are recorded by Messrs. H. J. Walton and S. Kemp in the Records of the Indian Museum of December, 1911 (vol. vi., part 5). Sporadic instances of the occurrence of representatives of the genus have been recorded previously in the Himalaya near the sources of the Sutlej, in Baluchistan, in the salt lakes of the Tibet plateau, and in China. The new records add the Bulandshahr district of the United Provinces of India and the Banihal district of Jamu, lying to the south of the main Himalayan axis, to the range of the genus. The specimens from both these areas, all of which were females, appear referable to the European *A. cancriformis*. In the Jamu district these crustaceans are asserted to be injurious to newly sprouting rice, but, as Mr. Kemp observes, this indictment requires investigation.

CONSIDERABLE economic importance attaches to the announcement by Dr. J. Stafford, in the January number of *The American Naturalist*, that he has discovered the later stages of the free-swimming larva of the Canadian oyster, which had long formed a gap in the developmental history of these molluscs. It is now shown that the larvæ continue to exist as such in the neighbourhood of the oyster-beds for two or three weeks longer than was previously known to be the case before they finally settle down as spat at an age of three or four weeks after fertilisation. The late larvæ were taken in plankton-nets, and for the future can readily be recognised. This will render it practicable to determine the exact date at which "cultch" should be laid down for the reception of the spat. From his own observations Dr. Stafford is led to believe that cultivation of the Canadian Atlantic oyster (*Ostrea virginica*) in the Pacific would prove profitable. The author has discovered that the British Columbia *O. lurida* differs from the Canadian and resembles the European species in being hermaphrodite.

THE chief result recorded in a paper—received as a reprint from *The Journal of Agricultural Science* (vol. iv., part ii.)—on "silver-leaf" disease, by Mr. F. T. Brooks, is the confirmation of the accepted view that this symptom, especially prevalent in the case of plum trees, is caused by the fungus *Stereum purpureum*. Mention is made of the observation of the same pathological appearance on sycamore, horse chestnut, Spiræa, and other trees.

IN his report for the year 1910–11 as director of the Royal Botanic Gardens, Ceylon, Dr. C. J. Willis takes leave of the post which he has occupied for fifteen years, not less to the great benefit of the agricultural interests in the island than to his personal distinction. Owing to the activities of the various assistants associated with him, the gardens have become recognised as an important centre of research, and in recent years a notable stream of distinguished botanists has taken advantage of the research facilities offered. During the year under review there has been a vigorous output of the Annals and Circulars, in which the papers by Mr. T. Petch have been prominent.

IN *The Journal of Genetics* (vol. i., No. 4) there is published a paper on the inheritance of doubleness and other characters in stocks, in which Miss E. R. Saunders follows up her previous conclusions. Having obtained the results that certain single races of stocks produce only single flowers, while others, eversporting, produce doubles and singles, and that the pollen grains apparently all carry doubleness, while the ovules carry in some cases double, in other cases single characters, it is now shown that the sulphur-white, a double-throwing race, is also eversporting in regard to plastid colour. Further, the two phenomena are curiously bound up, as the singles are all white, while the doubles are mostly cream, but a few are also white. These are the premises for which the author elaborates an explanatory hypothesis capable of being tested by further experiment. An appended note gives support to the belief that stock seeds destined to give rise to double flowers are proportionally more vigorous in growth than the single quality.

ONE of the most useful of the publications of the Board of Agriculture is its Journal, containing articles of general agricultural interest, and published monthly at the extremely low price of fourpence. Among recent articles may be mentioned one by Mr. H. C. Long on the identification and eradication of some common weeds, a subject on which the agriculturist still has much to learn. Dr. Raeder describes how small holdings for agricultural labourers are created in Denmark, the method being either to make State contributions to societies established for this purpose, or to advance loans direct to the labourers themselves. Although the small holder enjoys full right of ownership, the common law has been modified in some respects. The holding must always be used for agricultural purposes, and the stock must always be kept up and maintained in good condition. Certain privileges are forfeited if the holding is sold or sublet. The large majority of small holders are labourers, and on an average they work for wages during 155 days of the year.

IN *Petermann's Mitteilungen* for January, E. Banse discusses the central idea of geography, and would mark out geographical regions so that the interaction of all factors within each should aid in completing the picture of the region. He shows in a map how the present artificial divisions of continents might be more logically treated from a geographical point of view.

IN the *Zeitschrift für Vermessungswesen* for 1911 Prof. Hammer discusses the relation of pace-length to stature, and deals exhaustively with the data furnished by 368 students. He obtains 76 cm. as the ordinary pace-length, corresponding to a height of 1·60 metres, and 91 cm. for a height of 1·90 metres, the mean value of the whole series being 83½ cm. for a height of 1·73 metres. He refers also to certain experiments on German soldiers, which seem to indicate a distinct lengthening of the ordinary pace as a result of military training.

MR. J. E. SPAFFORD, of Jerusalem, communicates to *The Geographical Journal* for January a short account of a circumnavigation of the Dead Sea made by motor-boat in June last. Brief descriptions of the shores and various places on them are given, but no special observations of any kind were made. Some excellent photographs of different parts of the shore are given, and especially two illustrating the gorge of the Arnon River. An indication of the present tendency towards a more quantitative and precise treatment of geography is the paper in the same number, by Mr. B. C. Wallis, on the importance of precise description, aided by figures. He deprecates the use of indefinite expressions, and would use percentages and ratios derived from statistics spread over five-year or longer periods. The necessity for this is true not only for economic geography, but for other branches, and in many cases in advanced work the degree of accuracy might often be stated with advantage.

Himmel und Erde for January contains an excellent paper on seismographs and their records, by Dr. C. Mainka, of Strassburg. A summary is given of the many different modifications of the horizontal pendulum, with a detailed account of the author's bifilar pendulum. Of the few records which illustrate the paper, the most interesting is that of the Messina earthquake of 1908, furnished by the Mainka pendulum.

THE Austrian Geological Survey has also recently published (*Abhandlungen*, vol. xvi., part iii.) a memoir by Dr. Marian Salopek on the Triassic Cephalopoda of southern Dalmatia and Montenegro. Most of the new species and varieties are unfortunately represented only by a single specimen, but the descriptions and beautiful figures will be useful for comparison with corresponding fossils which are now being studied from Albania, Greece, and Asia Minor.

A SIMPLE form of recording filament electrometer is described by M. P. Villard in the December, 1911, number of *Le Radium*. The **U**-shaped carbon filament is that of a 110-volt 5 or 10-candle lamp, according to the sensitiveness required. It is supported horizontally midway between two small vertical plates of metal, the distance apart of which can be varied. They are connected to the poles of a dry pile, and the filament is attracted to one or the other, according to the potential to which it is charged. The motion is recorded photographically on a revolving drum by means of the light from an electric lamp reflected into a microscope objective by a small cylindrical mirror attached to the end of the filament. The motion is nearly aperiodic, the zero absolutely stable, and variations of frequency not exceeding 5 per second are correctly recorded.

IN an article in *The Oxford and Cambridge Review* for January, Mr. H. S. Shelton urges on the writers of text-books on heat the necessity of stating the law of "dissipation" or "degradation" of energy in a less general form than it takes, for example, in Poynting and Thomson's

"Heat." He sees "no ground whatever" for extending it from terrestrial to cosmic processes, and characterises it as a "scientific dogma" current at the present day because "any careful and systematic study of the principles of scientific method is considered unnecessary on the part of those who seek to solve physical problems." We should like to assure Mr. Shelton that the application of the law to molecular processes and to their interaction with the æther has received, and is receiving, the attention of physicists, who can deal with it without offence to the principles of scientific method. Whether their discussions are suitable for students' text-books is very doubtful.

SPECIAL interest attaches to a paper on the phthalylhydrazides, by Messrs. Chattaway and Wünsch, in the Chemical Society's Journal, on account of the fact that the authors have succeeded in preparing measurable crystals of the two varieties of a number of the compounds of this series: their crystalline properties have been examined by Mr. T. V. Barker, who has contributed to the paper complete data and drawings in the case of eight of the modifications. The occurrence of the two varieties is usually determined mainly by temperature, and the authors are therefore inclined to regard them as merely polymorphic. In this they agree with the conclusions arrived at by Piutti and Abati in reference to the substituted phthalimides, which exhibit a similar dimorphism. Later workers on the phthalimides have preferred to regard the two varieties as isomeric. The evidence in favour of this view is here very strong, because one of the varieties of the imides is colourless and the other yellow, and it is almost impossible to believe that the yellow colour could be produced by any process of remarshalling the colourless molecules. In the case of the hydrazides, the difference of colour is less striking, but, as the authors point out, the possibility of isomerism is one that must not be overlooked.

IT has long been known that depth of water on measured miles is a serious factor in determining speed results, and an article in *The Engineer* for January 26 gives prominence to recent investigations on this subject. Following experiments which have been made in this country on the Maplin and on the Skelmorlie measured miles, the first-mentioned having a depth of 45 feet and the second a depth of 240 feet, the United States Navy authorities have run trials with a battleship (the *Michigan*) and with two torpedo-boat destroyers (the *Flusser* and the *Reid*) over their three measured distances. The results show clearly the increase in power due to shallow depth, and it is probable that the two shallower courses will be discarded in future for high-speed trials, new courses being laid down.

THE first presidential address in the twelve years' history of the Society of Model and Experimental Engineers was delivered by Mr. Percival Marshall on January 22, the subject being "Model Engineering: Past, Present, and Future." That models have played a very important part in the development of real engineering practice is well known to those acquainted with the work of Newcomen, Watt, Murdock, Nasmyth, and other early pioneers. Probably the most striking example of service rendered by a model is to be found in Watt's invention of the separate condenser, devised while repairing the Newcomen model belonging to Glasgow University. Since these times the art of model-making has been practised continuously, not only by those professionally engaged, but also by others whose tastes have led them to seek recreation in mechanical pursuits. Exhibitions have been very instrumental in stimulating interest in model-making, and the large and valuable collection at the South Kensington Museum has had great influence, both as an educational factor and in promoting interest in models. Models are now used by hundreds of firms to demonstrate the merits or principles of their manufactures, and are invaluable in the educational work of technical colleges. Models of inventions are also extensively employed, one firm specialising in this class of work turning out some 2500 models every year. Fully twenty thousand metal-turning lathes have been sold during the last seven years by the various firms who cater for amateur workers. The president urged that museums equipped with models representing the chief manufactures should be set up in large towns; these would be very valuable in the education of the rising generation, and would be a source of reference and stimulation for those with inventive minds.

A SECOND edition of Mr. C. T. Millis's "Technical Arithmetic and Geometry" has been published by Messrs. Methuen and Co., Ltd. The new edition has been revised; decimals now receive treatment before vulgar fractions are studied, and notes on factors, multiples, and drawing-office work have been added.

A SEVENTH edition, revised by Prof. F. W. Gamble, F.R.S., of "A Junior Course of Practical Zoology," by the late Prof. A. Milnes Marshall and the late Dr. C. H. Hurst, has been published by Messrs. Smith, Elder and Co. In this edition a new chapter, dealing with the chick, has been added to meet the needs of those who attempt elementary embryology in their junior course. The price of the volume is 10*s*. 6*d*.

MESSRS. CONSTABLE AND CO., LTD., will commence the publication, in April next, of a new quarterly scientific review to be entitled *Bedrock*, "a quarterly review of scientific thought." The editorial committee consists of Sir Bryan Donkin, Prof. E. B. Poulton, F.R.S., Prof. H. H. Turner, F.R.S., and Mr. G. Archdall Reid. The acting editor will be Mr. H. B. Grylls. The first number will contain the following amongst other contributions:—Value of a logic of method, Prof. J. Welton; recent researches on alcoholism, G. Archdall Reid; Darwin and Bergson as interpreters of evolution, Prof. E. W. Poulton; social and sexual evolution, the hermit of Prague; notes on current research; the interaction of passing ships, Prof. A. H. Gibson.

OUR ASTRONOMICAL COLUMN.

ASTRONOMICAL OCCURRENCES FOR FEBRUARY:—

Feb. 1. 1h. 36m. Neptune in conjunction with the Moon (Neptune 5° 39′ S.).
3. 8h. 0m. Saturn at quadrature to the Sun.
6. 17h. 54m. Mercury in conjunction with Uranus (Mercury 0° 55′ S.).
11. 9h. 21m. Jupiter in conjunction with the Moon (Jupiter 4° 37′ N.).
14. 10h. 30m. Venus in conjunction with the Moon (Venus 5° 44′ N.).
15. 9h. 21m. Uranus in conjunction with the Moon (Uranus 4° 36′ N.).
23. 20h. 28m. Saturn in conjunction with the Moon (Saturn 4° 23′ S.).
24. 9h. 29m. Venus in conjunction with Uranus (Venus 0° 39′ N.).
25. 15h. 32m. Mars in conjunction with the Moon (Mars 1° 43′ S.).
26. 7h. 0m. Venus in the descending node.
28. 10h. 5m. Neptune in conjunction with the Moon (Neptune 5° 46′ S.).